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10/018,721	04/22/2002	Karsten Meyer-Grafe	(H)01PH0419USP	2612

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EXAMINER
KOSOWSKI, ALEXANDER J

ART UNIT	PAPER NUMBER
2125	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

<table>
<tr><td rowspan="2">Office Action Summary</td><td>Application No.
10/018,721</td><td>Applicant(s)
MEYER-GRAFE ET AL.</td></tr>
<tr><td>Examiner
Alexander J Kosowski</td><td>Art Unit
2125</td></tr>
</table>

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 December 2001* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-66* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-66* is/are rejected.

7)☒ Claim(s) *32-47, 49-51, 53-61 and 63-65* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 April 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2* .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

1) Claims 32-66 are presented for examination. Claims 1-31 have been canceled in the pre-amendment filed 12/14/01.

IDS

2) Some of the references in the IDS filed 12/14/01 have not been considered because they have not been provided with a translation.

Title

3) The title of this application, "Security-related bus automation system" is inappropriate. Examiner suggests title be changed to --Safety-related bus automation system--.

Drawings

4) The drawings are objected to as failing to comply with 37 CFR 1.83(a) because the features disclosed in the description and claims should be illustrated in the drawings in a form of graphical drawing symbol or a labeled representation. Element numbers drawn to empty boxes do not provide adequate labeling for the system of the present invention.

Specification

5) The disclosure is objected to because of the following informalities:

Referring to Paragraph 0001, line 4, the phrase "operation such" should read --operation of such--.

Referring to Paragraph 0002, line 3, the phrase "components an which" should read --components on which--.

Referring to Paragraph 0003, line 9, the phrase "links an the" should read --links and the--.

Referring to Paragraph 0005, line 5, the phrase "an or off" should read --on or off--.

Appropriate correction is required.

6)   Note: The examiner has provided a number of examples of the specification deficiencies

in the above, however, the list of deficiencies may not be all inclusive. Applicant should refer to

these as examples of deficiencies and should make all the necessary corrections to eliminate the

specification objections.

Claim Rejections - 35 USC § 112

7)   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

8)   Claims 47-66 are rejected under 35 U.S.C. 112.

Referring to claims 47-66, it is unclear whether applicant intends to claim a system or a

method. Claims 32-46 relate to a system, while claims 47-66, which are dependent on claims

32-46, relate to a method. Therefore, claims 47-66 are indefinite.

Claim Objections

9)   Claims 32-47, 49-51, 53-57, 58-59, 60-61, and 63-65 are objected to because of the

following informalities:

Referring to claims 32-47, 49-51, 53-57, 58, 60-61, and 63-65, the claims have references

in parentheses to numbers found in the drawings. These should be removed.

Referring to claim 59, there is insufficient antecedent basis for "the safety data item" and

"the negated safety data item".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

10)   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11)   Claims 32-37, 39, 42-57 and 64-66 are rejected under 35 U.S.C. 102(e) as being

unpatentable by Roth et al (U.S. Pat 6,385,562).

Referring to claim 32, Roth discloses an automation system comprising at least a bus

(col. 2 lines 12-22), I/O bus subscribers connected to the bus (col. 1 lines 38-47), a standard

control device (col. 3 lines 26-31), and at least one safety analyzer which monitors data flow via

the bus system and is designed to carry out at least one safety-related function, wherein the

safety analyzer is set up for checking and processing safety-related data in a bus datastream (col.

1 lines 48-60 and Figure 2). Also referring to claim 32, it is noted that the phrase "at least one

of" in line 7 is interpreted as "or". See MPEP 2173.05H.

Referring to claim 33, Roth discloses that the standard control device control at least one

safety-related output (col. 1 lines 55-60).

Referring to claim 34, Roth discloses that the safety analyzer has a freely programmable

logic device, which processes monitored safety-related data (col. 3 lines 58-67, whereby a

microcontroller is considered to be freely programmable).

Referring to claim 35, Roth discloses that the safety analyzer is not a logic bus subscriber

in the automation system and has at least one safety-related output via which at least one bus

subscriber which is associated with the safety analyzer of the automation system is switched on

or off (col. 5 line 62 through col. 6 line 5).

Referring to claim 36, Roth discloses that the safety analyzer is set up for switching off a

bus spur (col. 5 lines 62-65, whereby an operating unit can be shut off).

Referring to claim 37, Roth discloses that the safety analyzer has at least one safety-

related input via which the safety analyzer is connected to a safety-related device in the

automation system for detecting safety-related data (col. 1 lines 48-67).

Referring to claim 39, Roth discloses that the bus is a serial bus (col. 2 lines 5-11) and at

least one safety analyzer is arranged in a long-distance bus section of the automation system (col.

1 lines 44-46, whereby peripherals may be located at a long-distance).

Referring to claim 42, Roth discloses that the safety analyzer comprises a memory device

for storing a process map (col. 7 lines 24-38 and col. 3 lines 44-50).

Referring to claim 43, Roth discloses that the safety analyzer has a device for

manipulating at least one of input data and output data transmitted on the bus (col. 5 lines 18-43

and Figure 2).

Referring to claim 44, Roth discloses that the device overwrites at least one of the input

and output data in the safety analyzer (col. 5 lines 18-43).

Referring to claim 45, Roth discloses that the device inserts data into the datastream (col.

5 lines (col. 5 lines 18-43 and Figure 2).

Referring to claim 46, Roth discloses that at least one safety analyzer is of redundant

design (col. 1 lines 48-55).

Referring to claim 47, Roth discloses a method for operating an automation system comprising using a standard control device or carrying out a process control with the processing of process-link I/O data and safety-related data (col. 1 lines 38-67) and carrying out processing of safety-related data in at least one safety analyzer with safety-related logic linking data in the bus datastream being processed in the safety analyzer (col. 3 lines 58-67).

Referring to claim 48, Roth discloses that the standard control device control at least one safety-related output (col. 1 lines 55-60).

Referring to claim 49, Roth discloses comparing the safety-related logic linking data, which is transmitted via the bus, for at least one of the standard control device and at least one further safety analyzer with the corresponding logic linking data of the first safety analyzer, in a safety analyzer (col. 1 line 61 through col. 2 line 22, whereby each safety device can communicate with the others).

Referring to claim 50, Roth discloses the step of checking the logic linking data, which is produced by the standard control and is sent as output data via the bus in at least one safety analyzer by modeling the safety-related logic links of the standard control (col. 2 lines 35-46).

Referring to claim 51, Roth discloses carrying out safety-related functions in response to the comparison by the safety analyzer (col. 1 lines 48-60).

Referring to claim 52, Roth discloses carrying out safety-related functions in response to the checking by the safety analyzer (col. 2 lines 47-51).

Referring to claim 53, Roth discloses carrying-out a safety-related function via a safety-related output of the safety analyzer (col. 4 lines 65-67).

Referring to claim 54, Roth discloses using the safety analyzer to carry out safety-related

functions in response to the safety-related data detected via the safety-related input of the safety

analyzer (col. 4 lines 47-63).

Referring to claim 55, Roth discloses that the process of carrying out the safety-related

function comprises switching a bus subscriber on or off (col. 5 line 65 though col. 6 line 5,

whereby peripheral units may be turned off).

Referring to claim 56, Roth discloses that the safety analyzer inserts at least one data item

into the bus datastream by means of a device for manipulating the datastream on the bus (col. 5

lines 18-43 and Figure 2).

Referring to claim 57, Roth discloses that the safety analyzer at least partially stores the

monitored datastream and copies input data in the bus datastreams to output data in the bus

datastream and vice versa (col. 5 lines 18-43 and Figure 2 and col. 3 lines 47-50).

Referring to claim 64, Roth discloses that quality data is produced by means of a safety

analyzer (col. 5 lines 38-43).

Referring to claim 65, Roth discloses that safety-related logic links used in a safety

analyzer are carried out in redundant form in at least one further safety analyzer and the same

safety functions are at least partially carried out by the two safety analyzers (col. 1 lines 48-55).

Referring to claim 66, Roth discloses that a safety analyzer also at least partially carries

out process data processing (col. 5 lines 38-43).

Claim Rejections - 35 USC § 103

12)   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13)   Claims 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roth as shown above, further in view of Fulton et al (U.S. Pat 4,680,753).

Referring to claims 58-59, Roth discloses the system above. However, Roth does not explicitly teach that the safety-related data is transmitted via the bus using a security protocol comprising an address and data protection information (CRC).

Fulton teaches a bus communication system in an industrial process whereby data transmitted via the bus comprises CRC appended to messages (col. 2 lines 38-46).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize CRC in the bus data transmission system shown by Roth since using CRC allows data to be validated (Fulton, col. 2 lines 45-46) and since consecutive CRC errors being received is useful to determine when a node needs to be reset (Fulton, col. 10 lines 52-67).

Claims 38, 40-41 and 60-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roth, further in view of Roth II (U.S. Pat 6,577,918).

Referring to claims 38 and 40-41, Roth discloses the system shown above. Roth also discloses that safety devices deal with safety-related control (col. 5 line 66 through col. 6 line 5). However, Roth does not explicitly teach that the bus is connected via an interface assembly to a host with the process-related control being arranged in the host and the safety-related control being arranged in the interface assembly, nor that the safety analyzer is arranged after the host or in the interface.

Roth II teaches a system for processing safety information whereby individual bus subscribers communicate using a master-slave principle, with process data being communicated by means of a master (col. 3 lines 12-27 and Abstract) and whereby a safety analyzer may be located in the interface (col. 2 lines 59-64 and Figure 1, whereby it is noted that the safety analyzer could be arranged elsewhere while still maintaining functionality).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a bus connected via an interface assembly to a host in the system taught by Roth since this would allow most processing to be done remotely at the master (Roth II, col. 3 lines 12-27), which would reduce the amount of processing power necessary in each node, thus reducing the cost.

Referring to claims 60-63, Roth teaches the system above. Roth also teaches that data is transmitted between individual bus subscribers by means of a data link (Roth, col. 2 lines 12-22) and that data may be copied into the bus datastream (col. 5 lines 18-43 and Figure 2). However, Roth does not explicitly teach that the bus system uses a master-slave principle, with data being transmitted between two slaves by means of a data link via a safety analyzer or via the master).

Roth II teaches a system for processing safety information whereby individual bus subscribers communicate using a master-slave principle, with data being communicated by means of a master or safety analyzer (col. 3 lines 12-27 and Abstract).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a master-slave principle in the system taught by Roth since this would allow processing to be done remotely at the master which would then transmit operation instructions to

the slaves (Roth II, col. 3 lines 12-27), which would reduce the amount of processing power

necessary in each node, thus reducing the cost.

Conclusion

14)   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Dorchak (U.S. Pat 5,161,110) – teaches a monitoring system for a process control system.

15)   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Alexander J Kosowski whose telephone number is 703-305-3958.

The examiner can normally be reached on Monday through Friday, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Leo Picard can be reached on 703-308-0538. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-746-7239 for regular

communications and 703-746-7239 for After Final communications. In addition, the examiner's

RightFAX number is 703-746-8370.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is 703-305-3900.

Alexander J. Kosowski
Patent Examiner
Art Unit 2125

LEO PICARD
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